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Total Number of Pages in This Submission

8

Application Number

09/822,073

Filing Date

March 30, 2001

First Named Inventor

Lenny Low

Art Unit

3753

Examiner Name

C. M. Atkinson

Attorney Docket Number

YR1-9

ENCLOSURES (Check all that apply)

☐

Fee Transmittal Form

☐

Fee Attached

☐

Amendment/Reply

☐

After Final

☐

Affidavits/declaration(s)

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Extension of Time Request

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Express Abandonment Request

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Information Disclosure Statement

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Certified Copy of Priority Document(s)

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Reply to Missing Parts/
Incomplete Application

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Reply to Missing Parts
under 37 CFR 1.52 or 1.53

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Drawing(s)

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Licensing-related Papers

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Petition

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Petition to Convert to a
Provisional Application

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Power of Attorney, Revocation

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Appeal Communication to Board
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Appeal Communication to TC
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Proprietary Information

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Status Letter

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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

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Signature

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Printed name

Anthony W. Karambelas

Date

October 12, 2006

Reg. No.

25,657

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PATENT
YR1-9

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS**

Appeal No. _____

In re Application of: LENNY LOW ET AL

Serial No.: 09/822,073

Filed: March 30, 2001

For: HEAT TRANSFER OF A REMOTE HEAT SOURCE USING A LOOP HEAT PIPE

APPELLANTS' REPLY BRIEF

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS**

In re Application of: LENNY LOW ET AL	:	Date: October 12, 2006
Serial No.: 09/822,073	:	Group Art Unit: 3753
Filed: March 30, 2001	:	Examiner: C. M. Atkinson
For: HEAT TRANSFER OF A REMOTE HEAT	:	
SOURCE USING A LOOP HEAT PIPE	:	

APPELLANTS' REPLY BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Reply Brief is in response to the Examiner's Answer of September 12, 2006. This brief is submitted in accordance with the provisions of 37 CFR §41.41.

ARGUMENT

The Examiner has rejected claims 1-6 under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors at the time the application was filed had possession of the claimed invention. The Examiner contends that with regard to claims 1, 3 and 5, the originally filed specification fails to disclose "a remotely-located heat source disposed...at a location that (it?) is remote from the heat dissipating system...; and a loop heat pipe thermally coupled between the...heat source and the heat dissipating system." Respondents respectfully submit, as previously contended, that there is sufficient disclosure for the limitation "a remotely located heat source disposed...at a location that is remote from the heat dissipating system" to be found in claims 3 and 5 as originally filed and, furthermore, in the specification at page 4, line 6 et seq where it is stated "a heat source 14 is disposed 31 on a spacecraft 20 at a location that is remote from a thermal radiator 12, 13". Respondents respectfully submit that similar recitations appear in other portions of the specification using alternative terminology.

It is Respondents' position that there is sufficient disclosure of "a loop heat pipe thermally coupled between the heat source and the heat dissipating system" to be found in the specification at page 4, line 7 et seq wherein it is stated "A heat transfer

“system 10 comprising a loop heat pipe 10 is thermally coupled 32 between the heat source 14 and the thermal radiator 12, 13.” Respondents respectfully submit that “Heat generated by the heat source 14 is coupled 33 to the thermal radiator 12, 13 by way of the loop heat pipe 10.” As has been previously submitted, Respondents respectfully contend that there is further support at page 4, line 11 et seq where it is stated “Thus, a heat transfer system comprising a loop heat pipe and heat transfer method that transfers heat from a remotely located heat source to a spacecraft thermal radiator have been disclosed.”

Respondents respectfully submit that with regard to the Examiner’s contention that in claims 1, 3 and 5 there is no support in the originally filed specification to disclose “a remotely located heat source disposed....at a location that is remote from the heat dissipating system...; and a loop heat pipe thermally coupled between the...heat source and the heat dissipating system”, Respondents offer the following:

In claim 3, line 2 et seq it is claimed:

“heat dissipating apparatus for radiating heat into space;

“a heat source disposed at a location that is remote from heat dissipating apparatus; and

“a loop heat pipe thermally coupled between the heat source and the heat dissipating apparatus for coupling heat generated by the heat source to the heat dissipating apparatus.”

Respondents further submit, as previously contended, that further support may be found at page 4, line 6 et seq., in the specification where it is stated “A heat source 14 is disposed 31 on a spacecraft 20 at a location that is remote (emphasis added) from a thermal radiator 12, 13. A heat transfer system 10 comprising a loop heat pipe (emphasis added) 10 is thermally coupled 32 between the heat source 14 and the thermal radiator 12, 13. Heat generated by the heat source 14 is coupled 33 to the thermal radiator 12, 13 by way of the loop heat pipe (emphasis added) 10.”

Respondents respectfully contend that this subject matter is described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors at the time the application was filed had possession of the claimed invention. Furthermore, Respondents respectfully contend that the originally filed specification does disclose “a remotely located heat source disposed...at a location that is remote from the heat dissipating system...; and a loop heat pipe thermally coupled between the...heat source and the heat dissipating system” in the claims and in the specification as recited above which is hereby respectfully incorporated by reference. For the

above recited reasons, Respondents respectfully submit that this ground of rejection has been obviated.

It is noted by Respondents that all of Respondents' concerns directed toward the objections (i.e., drawing objection, specification objection) are considered to be moot since objections are not appealable issues. Respondents duly take note of this and withdraw their remarks regarding same.

Respondents disagree that the limitations/language "a remotely-located heat source disposed...at a location that is remote from the heat dissipating system...; and a loop heat pipe thermally coupled between the...heat source and the heat dissipating system" is not supported within the originally filed specification. Respondents respectfully contend that support for a remotely-located heat source disposed at a location that is remote from the heat dissipating system is to be found in claim 1 as originally filed wherein it is claimed "a heat source disposed on the spacecraft at a location that is remote from heat dissipating apparatus." Furthermore, Respondents respectfully submit that a loop heat pipe thermally coupled between the heat source and the heat dissipating system is supported in claim 1 as originally filed wherein it is stated "a loop heat pipe thermally coupled between the heat source and the heat dissipating apparatus for coupling the heat generated by the heat source to the heat dissipating apparatus." These recitations appear as well in claims 3 and 5 as originally filed.

Respondents respectfully submit that on page 3, line 6 of the specification as originally filed there is stated "The exemplary heat transfer system 10 comprises a loop heat pipe 10." Respondents respectfully disagree that the specification as filed states that the loop heat pipe is the same as the heat dissipating systems (i.e., they are one in the same). Although Respondents recognize at page 3, line 6 there is recited "The exemplary heat transfer system 10 comprises a loop heat pipe 10. The loop heat pipe 10 comprises flexible thin walled tubing 15 comprising a loop heat pipe transport line 15 that is coupled between one or more evaporators 17 that are thermally coupled to the heat source 14 (Ku-band feed horn 14) and one or more condensers 16 that are thermally coupled to one or more of the radiator panels 13, 14" so as to cause the Examiner to come to this incorrect conclusion. The specification as just recited here and elsewhere, in addition to the claims as originally filed, does not support the Examiner's contention that the loop heat pipe is the same as the heat dissipating system. One of ordinary skill in the art would not understand this to be the case, nor does the Examiner's contention that "at the source of the heat dissipating system" are one and the same as the loop heat pipe so that claims 1, 3 and 5 cannot physically be possible since the above quoted limitation requires the loop heat pipe to be coupled

between the heat source and itself. Claim 1, for example, as is the case in claims 3 and 5, clearly states that “a loop heat pipe thermally coupled between the heat source and the heat dissipating apparatus for coupling heat generated by the heat source to the heat dissipating apparatus.” Respondents respectfully submit that claims 1, 3 and 5 are incapable of interpretations which result in the physical impossibility of requiring that the loop heat pipe be coupled between the heat source and itself as contended by the Examiner.

Respondents respectfully contend that the Examiner appears to be seizing upon the language of the specification as originally filed on page 3, line 6 et seq to wit “The exemplary heat transfer system 10 comprises a loop heat pipe 10” to support his contention that the phrase “a loop heat pipe thermally coupled between the...heat source and the heat dissipating system” as set out in claims 1, 3 and 5 cannot physically be possible since the above quoted limitation requires the loop heat pipe to be coupled between the heat source and itself. The Examiner contends that therefore the originally filed specification states that the loop heat pipe is the same as the heat dissipating system (i.e., they are one in the same). Respondents respectfully contend that in the very paragraph on page 3, line 6 et seq what follows thereafter is perfectly consistent with the terminology in claims 1, 3 and 5 and is inconsistent with the Examiner’s contention that the loop heat pipe is one in the same as the heat dissipating system.

Respondents respectfully direct the Board’s attention to the Summary of the Invention on page 1 at line 20 wherein it is stated “To accomplish the above and other objectives, the present invention provides for heat transfer systems and methods that use a loop heat pipe (emphasis added) to transfer heat from a remotely located heat source to a spacecraft thermal radiator or other heat dissipating apparatus (emphasis added)” and further at page 2, line 7 et seq wherein it is stated “The loop heat pipe is used to transport heat from the remotely located heat dissipation component or heat source the thermal radiator or heat pipe panel.”

Respondents respectfully submit that in claims 1, 3 and 5 there is refutation of the Examiner’s position since in claim 1 as originally filed, second element requires “a loop heat pipe (emphasis added) thermally coupled between the heat source and the heat dissipating apparatus (emphasis added) for coupling heat generated by the heat source to the heat dissipating apparatus (emphasis added).” Respondents respectfully submit that like terminology appears in claim 3 and well as in claim 5 as originally filed, as well as in claim 6.

Respondents respectfully submit that, as demonstrated above, they have shown clear support for “a remotely located heat source disposed at a location that is

“remote from the heat dissipating system; and a loop heat pipe thermally coupled between the heat source and the heat dissipating system.”

The Examiner has rejected claims 1-6 under 35 U.S.C. 102(b) as being anticipated by Esposto U. S. Patent No. 5,743,325. The Examiner directs Respondents' attention to at least Fig. 1 and col. 4, lines 20-22 of said reference.

Respondents again respectfully submit that Esposto '325 discloses a closed loop heat pipe transport design for a deployment application having a flexible section which connects to a payload structure and a deployable structure. The flexible section folds over itself while the deployable structure is stowed. Upon rotation of the deployable structure around a predetermined axis, the flexible section unfolds, with a portion of the flexible section passing through the predetermined axis. When the deployable structure has completed its rotation and is fully deployed, the components of the flexible section will lie in substantially the same plane, as previously pointed out by Respondents.

Respondents therefore respectfully submit that in Fig. 1 of Esposto '325 there is no designation of a heat dissipating system having a remotely located heat source which is not located on the heat pipe panel wherein a loop heat pipe thermally coupled between the remotely located heat source and the heat dissipating system couples the heat generated by the heat source to the heat dissipating system as required in the claims of the instant invention. In addition, as previously pointed out, Respondents respectfully submit that these features of the claims of the instant invention are nowhere to be found in col. 4, lines 11-14 of Esposto '325 wherein it is stated “Several possible positions of the serpentine sections 20 are shown in Fig. 1. The serpentine section 20 is fastened on one end to the fixed radiator panel 14 and on the other end to the deployable radiator 10.”

Respondents respectfully maintain their position that this recitation clearly states that the serpentine sections of the heat pipe are fastened on one end to a fixed radiator and on the other end to a deployable radiator, and nowhere is it expressly stated, implied or suggested that a loop heat pipe may be thermally coupled between a remotely located heat source and a heat dissipating system for coupling heat generated by the heat source to the heat dissipating system as set out in the claims of the instant invention.

For these reasons, Respondents respectfully contend that the rejections under 35 U.S.C. 112 have been overcome for the reasons cited above and that Respondents have shown that claims 1-6 are patentable over Esposto '325. Accordingly, Respondents respectfully request that the final rejection of the primary Examiner be reversed and that this application be allowed to go to issue.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Anthony W. Karambelas', written over a horizontal line.

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